Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Colonial Sugar Refinery
Savannah Foods & Industries Inc
Initial Title V Permit
Gramercy, St. James Parish, Louisiana
Agency Interest Number: 1276
Activity Number: PER20060001
Draft Permit 2560-00011-V0

I. APPLICANT:

Company:
Savannah Foods & Industries, Inc.
Colonial Sugar Refinery
1230 South Fifth Ave., Gramercy, Louisiana 70052
Approximate UTM coordinates are 723.500 kilometers East and 3326.500 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Colonial Sugar Refinery processes raw cane sugar into refined sugar products and molasses. This refinery produces approximately 876,000 tons/year of granulated sugars and molasses. The raw sugar is coarse, brown, sticky, and contains impurities that must be removed. Their process consists of four main steps: affination, clarification, decolorization, and crystallization.

Affination involves washing raw sugar crystals to remove excess syrup. This is followed by a melting step where the crystals are dissolved in water. In the clarification step, processing aids are added to the liquid stream which results in the removal of insoluble materials; i.e., sugar cane fibers, extraneous matter, etc. During decolorization, the soluble color components are removed using bone char and ion exchange resin. The last step, crystallization, returns the purified liquid to a crystalline form through the use of vacuum boiling. Resulting mixture is separated into crystals and syrup by means of centrifugal machines that consist of rapidly rotating vertical baskets. These baskets are lined with fine screens which retain the sugar crystals and discard the syrup for further refining. The sugar is washed with hot water in the centrifugal machines and carried by conveyors to rotary dryers called granulators. It is then screened and packaged.

The refining process requires large amounts of steam for heating, which is generated by boilers fueled with natural gas. There are four boilers on site served by a

common exhaust stack. Most of the air emissions are from combustion for steam generation. Total gas usage for the natural gas fired equipment at the facility will be limited to 2,235,000,000 cubic feet per year. Other sources of emissions are the pulverizing of granular sugar to produce powdered sugar and the revivification process for the bone char using a high temperature kiln.

Bone char emissions from bone char dryer exhaust (Emission Point 01) are controlled by a 98% efficient cyclone. The char kiln vacuum exhaust (Emission Point 02) is controlled by an approximately 98% efficient water column. All sugar dust control is associated with product handling. Wet cyclone collectors (rotoclones) are approximately 98% efficient at controlling sugar dust from each of the granulator exhausts (Emission Points 09-14), Bin No. 1 and Bin No. 5 exhausts (Emission Points 16 and 15, respectively), the small pack exhaust (Emission Point 43), cooler exhaust (Emission Point 18) and seed exhaust (Emission Point 19). Sugar dust from pulverizers 1-6 (Emission Points 20-24 and 29), powdered sugar equipment (Emission Point 44) and sugar silo (Emission Point 17) are controlled by a 99% efficient cloth filters. Dust from the lime silo (Emission Point 30) is also controlled by a 99% efficient cloth filter.

This modification increases the permitted production capacity of refined sugar and molasses products. This increase in capacity results in reclassification of the refinery as a major source of criteria air pollutants under Title V of the Clean Air Act. The facility remains a minor source of hazardous and toxic air pollutants. This increase in production capacity is also reflected in the increase of PM_{10} emissions.

As part of this application, the facility also proposes to install a voluntary NOx reduction project to offset the requested emission increases as well as requesting a fuel consumption cap. An authorization to construct, issued on February 8, 2006, initiated the emissions reduction project of installing a flue gas recirculation unit on Boiler No. 5. This project is set to be complete by the end of 2006. The emission factors were also updated and reconciled to reflect current operational data.

Savannah Foods & Industries Inc, Colonial Sugar Refinery is an existing cane sugar refinery established in 1896 in St. James Parish. The Colonial Sugar Refinery currently operates under Permit No. 2560-00011-01, issued August 4, 1997. This is the initial Part 70 operating permit for the facility.

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire were submitted by Savannah Foods & Industries Inc on January 16, 2006 requesting a Part 70 operating permit. Additional information dated May 23, 2006 was also received.

Project description

This modification increases the permitted production capacity of refined sugar and molasses products. This increase in capacity results in reclassification of the refinery as a major source of criteria air pollutants under Title V of the Clean Air Act. The facility remains a minor source of hazardous and toxic air pollutants. This increase in production capacity is also reflected in the increase in PM10 emissions. As part of this application, the facility also proposes to install a voluntary NOx reduction project to offset the requested emission increases as well as requesting a fuel consumption cap. An authorization to construct, issued on February 8, 2006, initiated the emissions reduction project of installing a flue gas recirculation unit on Boiler No. 5. This project is set to be complete by the end of 2006. The emission factors were also updated and reconciled to reflect current operational data.

Permitted Air Emissions

The permitted emission rates are a reflection of the proposed operating conditions for the Colonial Sugar Refinery. The proposed emissions increases are due to increased production capacity. The sources of emissions are boilers, kilns and various dust collecting equipment. The permitted emission rates are in tons per year as follows:

Pollutant	Before	After	Change
PM_{10}	24.5	36.23	+11.73
SO_2	1.1	0.67	-0.43
NO_X	95.0	130.04	+35.04
CO	95.0	94.0	-1.00
VOC	6.1	6.98	+0.88

Regulatory Analysis

This application was reviewed for compliance with the Louisiana Part 70 operating permit program, Louisiana Air Quality Regulations, Louisiana Comprehensive TAP Emission Control Program, NSPS, NESHAP, CAM and PSD regulations.

Louisiana Air Quality Regulations and NSPS

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or Table 1 of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit.

Prevention of Significant Deterioration Applicability

The current facility does not have the potential to meet the definition of a Major Stationary Source with respect to the Prevention of Significant Deterioration (PSD) regulations.

MACT requirements

This facility is a minor source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51, therefore Maximum Achievable Control Technology and the NESHAP regulations do not apply.

Air Modeling Analysis

Not Applicable. Impact on air quality from the emissions of the facility will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping

requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

IV. PERMIT SHIELDS

No permit shield was requested.

V. PERIODIC MONITORING

Federal regulation 40 CFR 64 Compliance Assurance Monitoring is not applicable to this facility. Applicability for each pollutant requires that the unit be subject to an emission limitation or standard and must use a control device to achieve compliance.

VI. Explanation for Exemption Status or Non-Applicability of a Source

ID No:	Requirement	Notes
Entire Facility	Comprehensive Toxic Air Pollutant Emissions Control Program. [LAC 33:III. Chapter 51]	EXEMPT. The facility is not a major source for Toxic Air Pollutants as defined in LAC 33:III.5103.
	Chemical Accident Prevention Provisions [40 CFR 68] Chemical Accident Prevention and Minimization of Consequences [LAC 33:III. Chapter 59]	EXEMPT. This facility emits below the threshold quantities used to trigger this subpart.
	Protection of Stratospheric Ozone [40 CFR 82]	EXEMPT. There are no applicable CFC chillers/ coolers onsite.

VI. Explanation for Exemption Status or Non-Applicability of a Source		
ID No:	Requirement	Notes
GRP 6 CAP 1 Emissions Cap	Emission Standards for Sulfur Dioxide Continuous Emissions Monitoring [LAC 33:III.1511.A] Emission Standards for Sulfur Dioxide Recordkeeping and Reporting [LAC 33:III.1513]	EXEMPT. Units emit less than 250 tons of SO_2 per year. Record and retain at the site for at least 2 years the data required to demonstrate compliance with or exemption from SO_2 standards of Chapter 15. Compliance data shall be reported annually in accordance with LAC 33:III.918.
EQT 76 Propane Tank EQT 83 & 86 Gasoline Tanks	NSPS Subpart K – Standards of Performance for Storage Vessels for Which Construction, Reconstruction, or Modification Commences after June 11, 1973 and Prior to May 19, 1978. [40 CFR 60.110]	DOES NOT APPLY. Storage vessels have capacities less than 40,000 gallons.
EQT 76 Propane Tank EQT 83 & 86 Gasoline Tanks	NSPS Subpart Ka – Standards of Performance for Storage Vessels for Petroleum liquids for Which Construction, Reconstruction, or Modification Commences after May 18, 1978 and Prior to July 23, 1984. [40 CFR 60.110a]	DOES NOT APPLY. Storage vessels have capacities less than 40,000 gallons.
	NSPS Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. [40 CFR 60.110b]	DOES NOT APPLY. Storage vessels have capacities less than 75 m^3 (20,000 gallons).
EQT 50-53 Boilers	Standards of Performance for Fossil Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971[40 CFR 60, Subpart D]	DOES NOT APPLY. Boilers have heat input rates less than 250 MMBtu/hr.

VI. Explanation for Exemption Status or Non-Applicability of a Source

ID No:	Requirement	Notes
EQT 50-53 Boilers	Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978 [40 CFR 60, Subpart Da]	DOES NOT APPLY. Boilers are not electric steam generating units and have heat input rates less than 250 MMBtu/hr.
	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units [40 CFR 60, Subpart Db]	DOES NOT APPLY. Boilers were constructed prior to June 19, 1984 and have not been modified.
	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units [40 CFR 60, Subpart Dc]	DOES NOT APPLY. Boilers have heat input rates above 100 MMBtu/hr.

VII. Streamlined Requirements

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Colonial Sugar Refinery	None		

Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Sulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants – Toxic air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air

Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.

Worksheet for Technical Review of Working Draft of Proposed Permit

Company Name:	**Savannah Foods & Industries, Inc.**	**AI #:**	**1276**	**TEMPO Activity No:**	**Per20060002**
Facility Name:	**Colonial Sugar Refinery**	**Remarks Submitted by:**	**Martha Martin, P.E.**		
Permit Writer:	**Ann-Margaret Deavers**	**Permit Writer Email address:**	**Margaret.deavers@la.gov**		

Instructions

Permit Reference – Indicate specific portion(s) of the permit to which the remark relates (i.e. "Specific Condition 120", or "Section II Air Permits Briefing Sheet", etc.).

Remarks – Explain the basis for each remark. Provide regulatory citations where possible. If the remark is made due to an error or omission in the permit application this must be noted and the revised information ***must be submitted.*** Revised information may be submitted separately from this worksheet. Please be aware that revised information must be submitted in writing and certified by the Responsible Official, and if necessary, by a Professional Engineer licensed in Louisiana. *Please Note:* New or additional equipment, processes or operating conditions not addressed in the original permit application will be addressed on a case-by-case basis. The Department reserves the right to address such changes in a separate permit action.

DEQ Response – ***DO NOT COMPLETE THIS SECTION.*** This section will be completed by Air Permits Division of DEQ, included in the proposed permit package and made available for public review during any required public comment period.

- Additional rows may be added as necessary.
- Completed Form shall be emailed to the Permit writer in MS Word compatible format within the deadline specified in the email notification.

Permit Reference	Remarks	Air Permits Division Response (for official use only)
Statement of Basis, "Section II. Facility and Current Permit Status", page 2.	*Please revise first full paragraph to read as follows:* "Bone char emissions from bone char dryer exhaust (Emission Point 01) is controlled by an approximately 98% efficient cyclone. The char kiln vacuum exhaust (Emission Point 02) is controlled by an approximately 98% efficient water column. All sugar dust control is associated with product handling. Wet cyclone collectors (rotoclones) approximately 98% efficient control sugar dust from each of the granulator exhausts (Emission Points 09-14), Bin No. 1 and Bin No. 5 exhausts (Emissions Points 16 and 15, respectively), the small pack exhaust (Emission Point 43), cooler exhaust (Emission Point 18) and seed exhaust (Emission Point 19). Sugar dust from pulverizers 1-6 (Emission Points 20-24 and 29), powdered sugar equipment (Emission Point 44) and sugar silo (Emission Point 17) are controlled by approximately 99% efficient cloth filters. Dust from the lime silo (Emission Point 30) is also controlled by an approximately 99% efficient cloth filter."	**The use of approximately in the description of the wet scrubbers or rotoclones is appropriate. The efficiency for the rotoclones is based on a flow rate or pressure drop across the control device is used to ensure the efficiency of dust control. The use of approximately for the cloth filters gives a misrepresentation of the calculations submitted by the facility. The efficiency is used in determining the uncontrolled emissions from the cloth filter devices. Other methods are available for performance assurance of cloth filters such as MERV ratings. These have been made available to the facility.**

Statement of Basis, "Section III Permitted Air Emissions" in-text table	PM10 Before should read "24.5", based annual contributions of 4.5 tons bone char, 7.4 tons sugar dust and 1.5 tons starch dust. The After PM10 should read "36.72" ton/yr per revised EIQ sheets previously submitted. The PM10 Change is "+12.22" ton/yr.	**The correction for the previously permitted amount has been made. Upon recheck of addition, the sum of PM10 for the current permit is 36.23 and will be changed to reflect this.**
Statement of Basis "Section III. Proposed Permit/Project Information: General Condition XVII. Activities", page 5	This item references a list of approved activities in "Section VIII". Should this be revised to read "Section IX. Insignificant Activities"?	**General Conditions XVII Activities and Insignificant Activities fall under two separate sections in the body of the permit.**
Air Permit Briefing Sheet, Section III. "Description", page 2.	Please revise first full paragraph to read as follows: "Bone char emissions from bone char dryer exhaust (Emission Point 01) is controlled by an approximately 98% efficient cyclone. The char kiln vacuum exhaust (Emission Point 02) is controlled by an approximately 98% efficient water column. All sugar dust control is associated with product handling. Wet cyclone collectors (rotoclones) approximately 98% efficient control sugar dust from each of the granulator exhausts (Emission Points 09-14), Bin No. 1 and Bin No. 5 exhausts (Emissions Points 16 and 15, respectively), the small pack exhaust (Emission Point 43), cooler exhaust (Emission Point 18) and seed exhaust (Emission Point 19). Sugar dust from pulverizers 1-6 (Emission Points 20-24 and 29), powdered sugar equipment (Emission Point 44) and sugar silo (Emission Point 17) are controlled by approximately 99% efficient cloth filters. Dust from the lime silo (Emission Point 30) is also controlled by an approximately 99% efficient cloth filter."	**The use of approximately in the description of the wet scrubbers or rotoclones is appropriate. The efficiency for the rotoclones is based on a flow rate or pressure drop across the control device is used to ensure the efficiency of dust control. The use of approximately for the cloth filters gives a misrepresentation of the calculations submitted by the facility. The efficiency is used in determining the *uncontrolled emissions from the cloth filter devices. Other methods* are available for performance assurance of cloth filters such as MERV ratings. These have been made available to the facility.**
Air Permit Briefing Sheet, Section III. "Permitted Air Emissions" in-text table, page 3.	PM10 Before should read "24.5", based annual contributions of 4.5 tons bone char, 7.4 tons sugar dust and 1.5 tons starch dust. The After PM10 should read "36.72" ton/yr per revised EIQ sheets previously submitted. The PM10 Change is "+12.22" ton/yr.	**The correction for the previously permitted amount has been made. Upon recheck of addition, the sum of PM10 for the current permit is 36.23 and will be changed to reflect this.**
Air Permit Briefing Sheet, Section IX. "Insignificant Activities", page 4.	Please add the following: Two Molasses heaters <1mmBtu/hr each with reference to LAC 33:III.501.B.5.A.5, and one Molasses boiler 1 mmcf/yr with reference to *LAC 33:III.501*.B.5.A.1.	**Activities were added.**
Air Permit Briefing Sheet X. Table 1.	For EQT 53 should Chapter 5 be marked?	**Chapter 5 should be marked and the correction has been made.**
	For each reference to EQT 55 please clarify to read "Sugar Silo Baghouse". For each reference to EQT 74, please change "Starch Bin" to read "Lime Silo Baghouse".	**Corrected**

General Information, page 1 of 2	We will submit per instructions the following change in referenced individuals: Replace "Thomas Wilson" and "Aaron Zeringue" with "David Duncan".	**Noted**
Inventories	For EQT 74 please change "Starch Bin" to "Lime Silo Baghouse" in 3 places.	**Corrected**
Emission Rates for Criteria Pollutants	Please revise EQT 057 PM10 Avg. lb/hr to read "1.11" and PM10 Tons/Year to read "4.86" per revised EIQ sheets.	**The average lb/hr (0.11) and tons/yr (4.86) for this equipment are listed with the note that the emission rates are representative of the bone char only. *Particulates associated with combustion are* represented in the fuel use cap. To show all emissions (bone char + combustion) at the equipment level, the equipment would have to be removed from the natural gas fuel use cap.**
Emission Rates for Criteria Pollutants	*Please revise EQT 090 PM10 Avg. lb/hr to read* " 0.2" and PM10 Max. lb/hr to read " 0.22", and PM10 Tons/Year to read "0.88" per revised EIQ sheets.	**The *corrections* have been made.**
Emission Rates for *Criteria Pollutants*	Please revise Permit Phase Totals for PM10 from "39.73" to "36.72" *tons/year.*	**The permitted emissions for PM10 will read 36.23.**
Specific Requirements 15	Please clarify EQT055 to read "Sugar Silo Baghouse".	**Corrected**
Specific Requirements 33, 38, 43, 48, 53, 63, 68 and 73	Please revise wording for all rotoclones to match that for EQT058 Specific Requirement 28: "Pressure recordkeeping by electronic or hard copy once every shift during operation."	**Corrected**
Specific Requirements 116-122	For EQT 74 please change "Starch Bin" to "Lime Silo Baghouse".	**Corrected**
Specific Requirement 166	Please revise PM10 to read "36.72" tons/year.	**Revised to read 36.23.**
	End of Document	